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LETTER

FROM THE

CHIEF OF ENGINEERS

TO THE

SECRETARY OF WAR,

CONTAINING A

HISTORICAL SKETCH OF THE CORPS OF ENGINEERS

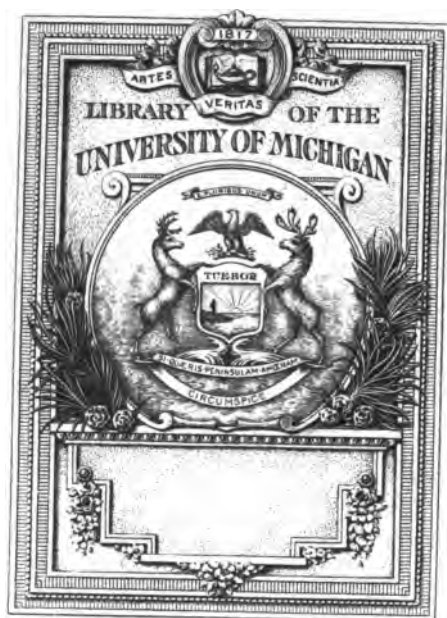
AND

REMARKS UPON ITS ORGANIZATION AND DUTIES,

IN

REPLY TO THE CIRCULAR OF SEPTEMBER 4, 1876, INVITING SUGGESTIONS UPON
THE SUBJECTS BEFORE THE COMMISSION FOR THE REFORM
AND REORGANIZATION OF THE ARMY.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1876.



U. S. Engineer det. f.

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HISTORICAL SKETCH OF THE CORPS OF ENGINEERS

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REMARKS UPON ITS ORGANIZATION AND DUTIES.

HEADQUARTERS CORPS OF ENGINEERS,
Washington, D. C., October 20, 1876.

SIR: Referring to your indorsement of September 4, 1876, upon the proceedings of the commission for the reform and reorganization of the Army of the United States, in which you state you will be pleased to receive any opinions or suggestions of mine touching the subject before the commission, I have the honor to present the following remarks concerning the organization of the Corps of Engineers, introducing the same with historical sketches of the two corps, compiled by Lieut. Col. Thomas L. Casey, Corps of Engineers.

HISTORICAL SKETCH OF THE CORPS OF ENGINEERS.

Upon the breaking out of the war of the Revolution, the country was singularly deficient in persons acquainted with the duties of military engineers.

With the exception of a few who had seen service at Louisburg, Lake George, Ticonderoga, Crown Point and Quebec, and had thus gained some practical experience in the construction, attack, and defense of fortified places, there was scarcely any engineering skill or talents in the patriot service. Nevertheless it was important that such officers should be appointed for the Continental Army, and on the 16th June, 1775, the Continental Congress—

Resolved, That there be one chief engineer at the grand Army, and that his pay be sixty dollars per month.

That two assistants be employed under him, and that the pay of each of them be twenty dollars per month.

That there be one chief engineer for the Army in a separate department, and two assistants under him; that the pay of the chief engineer be sixty dollars per month, and the pay of his assistants each, twenty dollars per month.

The pay given above to the office of chief engineer, and assistant engineer, was the compensation which attached at that time to the grades of colonel and captain respectively, and the officers appointed in the Army under this resolution were commissioned with those ranks respectively, and this practice continued for the first year of the war, but by April, 1776, assistant engineers were commissioned with as high rank as lieutenant-colonel in the Continental establishment.

On the 27th December, 1776, Congress—

Resolved, That General Washington shall be, and he is hereby, vested with full, ample, and complete powers to raise and collect together, in the most speedy and effectua manner, from any or all of these United States, sixteen battalions of infantry, in addition to those already voted by Congress; to appoint officers for the said battalions of infantry; to raise, officer, and equip three thousand light-horse, three regiments of artillery, and a corps of engineers, and to establish their pay. * * * That the foregoing powers be vested in General Washington for and during the term of six months from the date hereof, unless sooner determined by Congress.

Under this law it is probable, that some organization styled a Corps of Engineers, was established in the Army under the rules and regulations of General Washington.

The news of the conflict of the colonies with Great Britain, together with the efforts of our diplomatic agents abroad, soon brought a crowd of foreign officers, principally French, to our shores, some of whom had been educated as military engineers, and were commissioned in our Army as such, and assigned to the various armies and commands as needed. Among the arrivals in the early part of 1777 were four officers from the royal corps of engineers of the French army, who were commissioned, respectively, in the engineers, with the rank, one, of brigadier-general, two, of colonel, and one of lieutenant-colonel, the brigadier-general, Louis le ~~Begum~~ ^{Régulo} du Portail, taking precedence and rank of all other engineers in the service.

The propriety of establishing by law, a Corps of Engineers in the Army, was one of the subjects which attracted the attention of Congress, and, on the 6th March, 1778, a letter, dated the 3d of the same month, from a congressional committee in the camp, inclosing a plan for the establishment of a Corps of Engineers, was received in Congress, but action on the matter was then postponed. On the 27th May, 1778, the following resolution was passed:

Resolved, That in the Engineering Department three companies be established, each to consist of—

	Pay per month.
1 captain	\$50 00
3 lieutenants, each	33 33½
4 sergeants, each	10 00
4 corporals, each	9 00
60 privates, each	8 33½

These companies to be instructed in the fabrication of field-works, as far as relates to the manual and mechanical part. Their business shall be to instruct the fatigue parties to do their duty with celerity and exactness, to repair injuries done to the works by the enemy's fire, and to prosecute works in the face of it.

The commissioned officers to be skilled in the necessary branches of mathematics; the non-commissioned officers to write a good hand.

These were the first companies of engineer troops organized in our service; and although the law for the creation of a Corps of Engineers was still delayed, the fact that at this time the engineers in service

must have had some organization in the form of a corps is apparent from the resolution of April 18, 1778, as follows :

Resolved, That General Washington be authorized and directed forthwith to convene a council, to consist of the major-generals in the State of Pennsylvania and the general officer commanding the Corps of Engineers, and with the advice of the said council to form such a plan for the general operations of the campaign as he shall deem consistent with the welfare of these States.

And also from the resolution of June 13, 1778, namely :

Resolved, That Mons. du Cambray be annexed to the Corps of Engineers commanded by Brigadier du Portail, with the rank and pay of a lieutenant-colonel.

On the 11th March, 1779, the following resolutions constituting a Corps of Engineers were passed in Congress :

Resolved, That the engineers in the service of the United States shall be formed in a corps and styled the "Corps of Engineers," and shall take rank and enjoy the same rights, honors, and privileges with the other troops in the Continental establishment.

That a commandant of the Corps of Engineers shall be appointed by Congress, to whom their orders or those of the Commander-in-Chief shall be addressed, and such commandant shall render to the Commander-in-Chief, and to the Board of War, an account of every matter relative to his department.

That the engineers shall rank in their own corps according to the dates of their respective commissions.

That every year, previous to the opening of the campaign, the commandant of the corps shall propose to the Commander-in-Chief, and to the Board of War, such a disposition of the engineers as he shall judge most advantageous, according to the knowledge which he is supposed to have of their talents and capacity.

Resolved, That the Board of War be empowered and directed to form such regulations for the Corps of Engineers and companies of sappers and miners as they judge most conducive to the public service, and that the board report such allowances as they judge adequate and reasonable to be made to the officers of the Corps of Engineers for traveling charges, and when on command at a distance from camp, or in places where they cannot draw rations.

On the 11th of May, 1779, the following resolutions concerning the engineers were passed :

Resolved, That the pay and subsistence of the engineers, and of the officers and men of the companies of sappers and miners, shall be the same with those of officers of the like rank, and of the men, in the artillery of these States.

That Brig. Gen. du Portail be appointed commandant of the Corps of Engineers and companies of sappers and miners.

Under the operations of these laws, the Corps of Engineers, with its companies of sappers and miners, served in the armies during the war of the Revolution, with efficiency and distinction, and numbers of its officers were brevetted by Congress for their distinguished services. The commandant of the corps was especially rewarded, as appears from the resolution of November 16, 1781, as follows :

Resolved, That Brig. Gen. du Portail, commanding officer of the Corps of Engineers, in consideration of his meritorious services, and particularly of his distinguished conduct in the siege of York, in the State of Virginia, be, and he is hereby, promoted to the rank of major-general.

It is difficult to enumerate the officers composing the Corps of Engineers in the Army of the Revolution, but it is believed that it did not

contain, outside of the companies of sappers and miners, any officer of a lower grade than captain. The names of one brigadier-general and commandant of the corps, of six colonels, of eight lieutenant-colonels, of three majors, and of ten captains, have been recovered. There is no question but that the corps was larger than the numbers given above.

In November of 1783, this Corps of Engineers and its companies of sappers and miners, were disbanded, and mustered out of service, having agreed to accept the commutation of five years' pay in lieu of the half-pay for life; and while many of the foreign officers returned to their homes in Europe, a number remained in the United States and became citizens of the country.

During the period which elapsed between the close of the revolutionary war, and the inauguration of the Government in 1789 under the present Constitution, nothing occurred which required the employment of military engineers.

As early, however, as 1789, in the plan submitted by the Secretary of War, General Henry Knox, to the President, for the general arrangement of the military forces of the country, there was recommended, as a part of the military establishment of the United States, "a small corps of well-disciplined and well-informed artillerists and engineers."

Under pressure of the relations existing between this country and the principal European countries, and the message of President Washington of December 3, 1793, Congress, on the 20th March, 1794, authorized the President to fortify certain harbors along the coast, and the next day appropriated funds for the same. There were no engineers in the Army to carry on these works, and so the President directed the temporary appointment of a number of engineers, to design and superintend the construction of the works, dividing the coast up into districts, and appointing one or more engineers for each district.

The gentlemen appointed to these positions were foreign-born, and a number of them had been in the Corps of Engineers of the revolutionary army. Among those appointed may be mentioned—

Stephen Rochefontaine,
Charles Vincent,
Peter Charles L'Enfant,
John Jacob Ulrich Rivardi,
John Vermonet,
Nicholas Francis Martinon,
Paul Hyacinte Perrault,

who were appointed for, and entered upon, the discharge of this duty, between the 25th of March and 12th of May of the year 1794.

On the 9th May, 1794, Congress passed an act providing for raising and organizing, for a term of three years, a corps of artillerists and engineers, to be incorporated with the corps of artillery in service, the entire number to consist of 992 rank and file.

The organization to be as follows :

1 lieutenant-colonel, commandant.

1 adjutant.

1 surgeon.

4 battalions.

4 majors.

4 adjutants and paymasters.

4 surgeon's mates.

16 companies, each to consist of—

1 captain.

2 lieutenants.

2 cadets; 4 sergeants; 4 corporals; 42 privates, sappers and miners; 10 artificers; and 2 musicians.

The Secretary at War was to provide the necessary books, instruments, and apparatus for the use and benefit of the corps, and the President was authorized to employ such proportions of said corps, in the field, on the frontiers, or in the fortification of the sea-coasts, as he might deem consistent with the public service.

The filling up, and organization of the corps was at once commenced. It was stationed at West Point, and at the same time a military school at that place was organized; but the apparatus and books were burned in 1796, and the school suspended until 1801, when it was revived and placed under the direction of Major Jonathan Williams, of the 2d Regiment of the Corps of Artillerists and Engineers. The organization of the corps was completed by the spring of 1795, Stephen Rochefontaine being appointed the lieutenant-colonel and commandant, and Henry Burbeck, Louis Tousard, J. J. U. Rivardi, and Constant Freeman the majors. It will be seen from this list, that several of the temporary engineers engaged upon the fortification of the coast, were commissioned in the Corps of Artillerists and Engineers, and as long as this corps existed, there were always a number of its officers engaged exclusively upon the construction and repair of the sea-coast works. Some of the companies were in garrison in the fortifications, but the main body was at West Point.

By the act of March 3, 1795, the Corps of Artillerists and Engineers was continued indefinitely, and its completion authorized.

By the act of May 30, 1796, to ascertain and fix the military establishment of the United States, the Corps of Artillerists and Engineers was to form part of the same, and it was to be completed in conformity to the organic act of 1794.

Laincourt, who visited West Point in 1796, states, that he found at that place four battalions of artillerists and engineers, composed of about two hundred and fifty men each, mostly made up of foreigners. But ten officers were present, representing "all nations."

The threatened disturbances with France continuing, a second regiment of artillerists and engineers was authorized by the act of April 27, 1798. By its terms, the regiment was to consist of—

1 lieutenant-colonel, commandant.

1 adjutant.

1 surgeon.

3 battalions.

3 majors.

3 adjutants and paymasters.

3 surgeon's mates.

12 companies, each to consist of—

1 captain.

2 lieutenants.

2 cadets; 4 sergeants; 4 corporals; 42 privates, sappers and miners; 10 artificers; and 2 musicians.

It was placed upon the same footing precisely as the first regiment raised, and was to be supplied with the same books and apparatus, and to do duty in the same places, and times, as were prescribed for the former.

The officers were appointed to rank from June 1, 1798, and John Doughty, was appointed the lieutenant-colonel and commandant of the regiment; Benjamin Brooks, Adam Hoops, and Daniel Jackson, being the majors.

By the act of July 16, 1798, to augment the Army of the United States, the President was authorized to appoint a number not exceeding four teachers of the arts and sciences, necessary for the instruction of the artillerists and engineers.

There was also authorized by this act an inspector of artillery, to be taken from the line of artillerists and engineers.

The recommendations leading to the above legislation will be found in an extract of a letter from the Secretary of War (James McHenry) to the Hon. Samuel Sewell, chairman of the Committee of Defense, &c., dated War Department, June 28, 1798, as follows:

3d. The act providing for raising and organizing a corps of artillerists and engineers, and the act to provide an additional regiment of the same, both enjoin the procurement at the public expense of all necessary books, instruments, and apparatus, for the benefit of the said respective regiments.

The Secretary, without designing to derogate from the merits of the officers appointed to the corps established by the acts cited, feels it his duty to suggest, that other and supplementary means of instruction to the books and instruments to be provided, appear to be absolutely indispensable to enable them to acquire a due degree of knowledge in the objects of their corps. It is certain that the best faculties and inclinations for the arts and sciences cannot be unfolded, and applied to useful purposes, when proper encouragement and assistance have been denied or neglected.

The art of fortification is connected with so many others, is of such extent, and its operations dependent on, and affected by circumstances so infinitely varied, that it is impossible any man can be rendered master of it by experience alone. Besides, the knowledge acquired by experience is often the result of our own faults, and acquired by a heavy, and it may be, in this art, disastrous expense to the public.

It is certainly to be wished that more attention had been paid to this subject, and that past recommendations had found a favorable access to the ear of Congress.

If the present moment does not admit of carrying into effect all that is desirable, and ought, under different circumstances, to be done, to create a body of qualified and

scientific engineers, it may, notwithstanding, be advisable to advance toward this point by such measures as are compatible with our present situation.

* * * * *

It is therefore submitted whether provision ought not to be made for the employment of three or four teachers of the enumerated sciences, to be attached generally to the two corps of artillerists and engineers, and obligated to give instruction and lessons at such times, places, and under such regulations as the President may direct.

The employment of teachers would give the intended effect to the provision of the laws for the appointment of two cadets to each company. It was supposed that these cadets would form a nursery, from which qualified officers might be drawn to fill vacancies, but it must occur, that without proper masters to teach them the sciences necessary to the engineers and artillerists, this nursery can produce no valuable plants.

In a paper upon the proper changes that should be made in the military establishment, written by the Secretary of War, James McHenry, and dated December 24, 1798, after recommending, that the organization of the Second Regiment of Artillerists and Engineers should be made the same as that of the First, he says :

It is deeply to be lamented that a very precious period of leisure was not improved toward forming among ourselves engineers and artillerists, and that, owing to this neglect, we are in danger of being overtaken by war without a competent number of characters of these descriptions. To form them suddenly is impracticable; much previous study and experiment are essential. If possible to avoid it, a war ought not to find us unprovided. * * * *

In the meanwhile, it is conceived to be advisable to endeavor to introduce from abroad at least one distinguished engineer, and one distinguished officer of artillery. They may be sought for preferably in the Austrian, and next in the Prussian armies. The grade of colonel, with adequate pecuniary compensations, may attract officers of a rank inferior to that grade in those armies, who will be of distinguished abilities and merit. But in this, as we know from past experience, nothing is more easy than to be imposed upon, nothing more difficult than to avoid imposition, and that, therefore, should the measure be sanctioned by a law, it will be requisite to commit the business of procuring such characters to some very judicious hand, under every precaution that can put him on his guard.

It is also suggested that an inspector of fortifications is much wanted. In case of a legislative provision on this subject, the officer may either be drawn from the Corps of Artillerists and Engineers, or it may be left discretionary with the President to choose him where he pleases.

By the act of March 2, 1799, to augment the Army, an additional battalion of artillerists and engineers was authorized, which completed the Second Regiment of Artillerists and Engineers to the same strength as the First Regiment.

And by the act of March 3, 1799, for the better organization of the troops of the United States, the President was authorized to engage and appoint, distinct from the officers of the Corps of Artillerists and Engineers, two engineers with the rank of lieutenant-colonel, and to stipulate, and allow them respectively, such compensation as he shall find necessary and expedient.

The act also provided for the appointment of an inspector of fortifications, whose duties were to be assigned him by the Secretary of War, under the direction of the President, to be taken from the Corps of Artillerists and Engineers, or other corps, and if he shall not be an

officer in the artillery or Army, to be entitled to the rank of major in the Army.

It is not known whether the two officers of engineers, distinct from the Corps of Artillerists and Engineers, with the grade of lieutenant-colonel, were ever appointed; it is probable they were not. Nevertheless, in the act of May 14, 1800, to discharge the officers and men raised under the acts of March 2 and 3, 1799, it was provided that "the engineers, the inspector of artillery, the inspector of fortifications, and the two regiments of artillerists and engineers should be retained in service."

No further legislation affecting the Corps of Artillerists and Engineers is found until the act of March 16, 1802, fixing, and reducing materially, the military establishment. By this act the Corps of Artillerists and Engineers was discontinued, and from it two corps—a regiment of artillerists, and a corps of engineers—were created. The following remarks of Secretary McHenry, precedent to the above legislation, will be found of interest in this connection. They are extracted from a report made by him to the President, on the 5th of January, 1800, upon the subject of the Military Academy, and re-organization of the Army:

It is conceived that the entire union of the officers of artillerists and engineers in one corps, as in our present establishment, is not advisable. The art of fortification and the service of artillery, though touching each other in many points, are in the main distinct branches, and each so comprehensive that their separation is essential to perfection in either. This has been ascertained by long experience. Among the powers of Europe there is not one recollected, which at the present day, is not conscious of this truth. When any of them have attempted to unite these corps, the disadvantages which resulted were soon felt to be so momentous, as to produce conviction that each required a separate organization. Such an union was once attempted in France. According to an ordinance of the 8th of December, 1755, the artillery and engineer corps of that nation, which had been separate, were combined in one. The experiment, however, was of short duration. In 1758, the engineer corps was disjoined from the corps of artillery, and called as before, the corps of engineers, since which time these corps have remained separate.

The recommendations of Secretary McHenry with reference to the revival of the Corps of Engineers, contained in the same report, are as follows:

The regiment of engineers consisting entirely of officers, if we exclude the companies of miners, it remains to speak of its organization. Let it consist of, viz, two lieutenant-colonels, one first and one second, as already provided by law, three majors, twelve captains, twenty-four first lieutenants, twenty-four second lieutenants, twenty-four cadets.

The companies of miners, and their labors, to be under the direction and immediate command of officers of this corps, and to make a part thereof.

It will be perceived, and it is observed with regret, that the engineer regiment cannot be immediately formed by the mere act of transferring into it officers from any of the existing regiments. In order to answer its high destination it must be filled slowly, and under the exercise of great caution and responsibility.

In a further communication of Secretary McHenry concerning the Military Academy, and the proposed revival of the Corps of Engineers, dated January 31, 1800, he says:

A slight attention to circumstances and the actual position of our country, must lead

to the conviction, that a well-connected series of fortifications is an object of the highest importance to the United States, not only as these will be conducive to the general security, but as a means of lessening the necessity, and, consequently, the expense, of a large military establishment.

* * * * *

We must not conclude from these brief observations, that the service of the engineer is limited to constructing, connecting, consolidating, and keeping in repair fortifications. This is but a single branch of their profession, though, indeed, a most important one. Their utility extends to almost every department of war, and every description of general officers, besides embracing whatever respects public buildings, roads, bridges, canals, and all such works of a civil nature. I consider it, therefore, of vast consequence to the United States, that it should form in its own bosom, and out of its own native materials, men qualified to place the country in a proper posture of defense, to infuse science into our Army, and give to our fortifications that degree of force, connection, and perfection, which can alone counterbalance the superiority of attack over defense.

By the act of March 16, 1802, fixing the military peace establishment of the United States, it was enacted :

SEC. 26. That the President of the United States is hereby authorized and empowered, when he shall deem it expedient, to organize and establish a Corps of Engineers, to consist of one engineer, with the pay, rank, and emoluments of a major; two assistant engineers, with the pay, rank, and emoluments of captains; two other assistant engineers, with the pay, rank, and emoluments of first lieutenants; two other assistant engineers, with the pay, rank, and emoluments of second lieutenant; and ten cadets, with the pay of sixteen dollars per month, and two rations per day; and the President of the United States is in like manner authorized, when he shall deem it proper, to make such promotions in the said corps, with a view to particular merit and without regard to rank, so as not to exceed one colonel, one lieutenant-colonel, two majors, four captains, four first lieutenants, four second lieutenants, and so that the number of the whole corps shall at no time exceed twenty officers and cadets.

SEC. 27. That the said corps, when so organized, shall be stationed at West Point, in the State of New York, and shall constitute a Military Academy; and the engineers, assistant engineers, and cadets of said corps shall be subject at all times to do duty in such places and on such service as the President of the United States shall direct.

SEC. 28. That the principal engineer, and, in his absence, the next in rank, shall have the superintendence of the said Military Academy, under the direction of the President of the United States; and the Secretary of War is hereby authorized, at the public expense, under such regulations as shall be directed by the President of the United States, to procure the necessary books, implements, and apparatus for the use and benefit of the said institution.

Under the operations of this act the following officers were appointed :

Major Jonathan Williams, of the late Second Regiment of Artillerists and Engineers, and Inspector of Fortifications, appointed major Corps of Engineers, and principal engineer, and became the Superintendent of the Military Academy April 13, 1802.

William Amherst Barron, captain Corps of Engineers, teacher of mathematics, April 13, 1802.

Jared Mansfield, captain Corps of Engineers, teacher natural and experimental philosophy, May 3, 1802.

Peter Anthony Dransey, first lieutenant Corps of Engineers, (declined.)

James Wilson, first lieutenant Corps of Engineers.

Cadet Joseph Gardner Swift, student.

Cadet Simon M. Levy, student.

Cadet Walker Keith Armistead, student.

This was the beginning of the present Corps of Engineers, and of the Military Academy at West Point. To quote the words of Major Williams—

A part only of the officers were appointed soon after the passage of the act, of whom the major, who was *ex officio* the chief engineer, and two captains, took charge of the academy, the students of which were the cadets belonging to the regiment of artillery. The major occasionally read lectures on fortifications, gave practical lessons in the field, and taught the use of instruments generally. The two captains taught mathematics; the one in the line of geometrical, the other in that of algebraical demonstration.

From its very organization, some commissioned officers of the corps were engaged upon the fortifications of the coast, and the majority of those who acted the part of teachers, during the first two or three years of the existence of the academy, were soon replaced by teachers and professors appointed to instruct in special subjects. By February of 1808, but one officer of the corps remained at the Military Academy, who served in the capacity of Acting Superintendent, and also instructor of certain branches. In the words of Colonel Williams—

It was not probably foreseen, that although the headquarters of the corps might be at West Point, yet the duties of the individual officers necessarily spread them along our coast from one extremity of the United States to the other, and, as the whole number of officers can be no more than sixteen, they could not in their dispersed state constitute a military academy. The incongruity of a stationary and errant existence in the same corps, has been amply exemplified by experience.

It is not proposed to attempt any history of the Military Academy, or to quote the laws which affected it; it is sufficient to say that the charge and superintendency of that institution remained in the Corps of Engineers until July 13, 1866, when the superintendency passed to the Army at large, and that during the supervision of the Military Academy by the Corps of Engineers, it attained to its present state of efficiency and value to the country.

By the act of February 28, 1803, it was provided :

SEC. 3. That the commanding officer of the Corps of Engineers be authorized to enlist, for a term not less than three years, one artificer and eighteen men, to aid in making practical experiments, and for other purposes, &c., &c.

By the act of April 10, 1806, for establishing rules and articles for the government of the armies of the United States, it was enacted :

ART. 63. The functions of the engineers being generally confined to the most elevated branch of military science, they are not to assume, nor are they subject to be ordered on any duty beyond the line of their immediate profession, except by the special order of the President of the United States, but they are to receive every mark of respect to which their rank in the Army may entitle them respectively, and are liable to be transferred at the discretion of the President from one corps to another, regard being paid to rank.

As this law has an important bearing upon the administration and

duties of the Corps of Engineers, it is proper that the facts leading to its enactment should be stated.

In the latter part of 1802, in which year the Corps of Engineers was revived and stationed at West Point, a dispute arose between Lieutenant-Colonel Williams, commandant of the corps, and Captain George Izard, of the regiment of artillerists, who with his company was stationed at the same post, concerning the right of Colonel Williams to exercise command over these troops of the artillery line. The matter was referred to General Dearborn, who was at the head of the War Department during the administration of Mr. Jefferson, and who decided—

That no officer, cadet, or soldier of the Corps of Engineers shall be subject to the orders of any officer of any other corps, but subject to the orders of the President only, or, when in actual service, to the order of the commanding general; and no officer of engineers shall, under any circumstances, command any officer or any troops of any other corps, except by special orders of the President.

The articles of war in force at this time, were those published by order of Congress, September 20, 1776, and by the 25th and 26th articles, officers of engineers felt themselves entitled to command according to their rank, when they were thrown on duty with other corps of the Army. General Dearborn was of opinion, that the Corps of Engineers as then organized, being composed mainly of officers, and being engaged in scientific pursuits, should not exercise command in the line, unless by special assignment of the President. The decision of General Dearborn was received with great mortification and dissatisfaction by the officers of the Corps of Engineers, the greater part of whom had been transferred from the line to form the corps. They could not perceive by what authority or rule the Secretary of War could deprive them of their lawful prerogatives. On the 30th of November, 1804, they addressed a memorial to the President of the United States, appealing to his sense of justice from the decision of the Secretary of War, which decision they conceived materially affected their standing in the Army, and abridged their just rights, but no answer was made to their memorial.

In this state of things the Corps of Engineers felt their situation to be very embarrassing and unpleasant, and the whole corps at length determined to resign their commissions. The two field officers of the corps, Lieutenant-Colonel Williams and Major Wadsworth, did actually resign. Under these circumstances a letter, dated March 29, 1805, was written to Colonel Williams by General Wilkinson, the Commander-in-Chief, with the approbation of the War Department, as follows :

I am authorized by the Secretary of War to inform you, that if agreeable to you, the President will re-appoint you to the command of the Corps of Engineers, on the express condition, that you are not to interfere with the discipline, police, or command of the troops of the line but by his orders, to which alone you are to be subject, and that in all other respects, you are to enjoy the honors due to your rank. Should this proposition be acceptable to you, you will be pleased to signify your disposition to the Secretary of War without delay, and in such explicit terms as may preclude misapprehension. The President is now at Monticello, but will be here about the 8th of the next

month, at which time, should it be agreeable to you, you may make a visit to the city in order to pay your respects to our superior.

Permit me, sir, to add my earnest hopes that you may not pause for a determination in this case, because, I am convinced, you will stand acquitted by every professional man of intelligence and honor, should you embrace the proposition. It is unquestionable that the elevated pursuits of the Corps du Génie do not allow time for the necessary attentions to the details, police, and discipline of the line, and it follows, as in other services, that the officers of that corps should not be burdened with the responsibility attached to duties in their nature incompatible. But admitting the practice of other nations, &c., to be at variance with our own, if the United States are acknowledged to be sovereign and independent, we cannot deny to the regular authority, powers and capacities to ordain such subordinate arrangements, as may be deemed conducive to the public weal, and it is the duty of every good citizen to conform, when such conformity does not affect his honor. In the case before us the suspension of ex-official command, is deemed essential to the interests of a particular corps, but no subversion of inherent principles or fundamental right takes effect, because you are held liable to general command upon the orders of the President.

I beg to hear from you soon, and, I hope, to my satisfaction. You owe much to the partiality of the President, more to the claims of your country.

This correspondence led to the issuing of the following General Order, dated April 17, 1805:

As the scientific pursuits of the Corps of Engineers do not allow time for attention to details, police, and discipline of the troops of the line, it follows, as in other services, that the officers of that corps should not be burdened with the responsibility attached to duties in their nature incompatible.

The President has thought proper to decide, that the officers of the engineers shall not interfere with the discipline, police, or command of the troops of the line *unless by his special order, to which alone they are subject.*

But this suspension of official command, though deemed essential to the interests of a particular corps, does not subvert any inherent principle or fundamental right, because the superior officers of engineers are held liable to be called into general command, whenever the public service may require, and the will of the President directs.

In all cases not affected by this regulation, the officers of the Corps of Engineers are invariably to enjoy the respect due to their commissions, and they are to receive the same honors which are paid to the officers of similar grade in the line of the Army.

On the 19th of April, 1805, Colonel Williams accepted the re-appointment of chief engineer and lieutenant-colonel Corps of Engineers, and on the 10th of the following April (1806) the 63d article of war was enacted to give to the General Order of April 17, 1805, the force of law.

Under the operations of this law, upon the breaking out of war with Great Britain, Colonel Williams applied for command in the line of the Army, which was authorized by the President, under date of June 23, 1812, in the following instructions to General Bloomfield, whose headquarters were in New York City:

It is the pleasure of the President, that whenever the exigencies of the service may require the talents and knowledge of the officers of the Corps of Engineers, beyond the line of their immediate profession, you may assign to those under your command such duties in the line of the Army, as may comport with their rank.

and in the early days of July, Colonel Williams was ordered to take the command of Castle Williams on Governor's Island.

Again, on the 6th of April, 1813, Col. J. G. Swift, Chief Engineer, re-

ported himself for duty to Gen. George Izard, the commandant of the department including New York Harbor, and by a special order of the President received the command of Staten Island, with a brigade, composed of Col. Samuel Hawkins's and Col. Alexander Deniston's regiments of infantry, the 32d and 41st, which command he exercised in addition to his duties as Chief Engineer, and his charge of the Military Academy. Colonel Swift was at that time personally superintending the fortifications of New York Harbor.

On the 23d of February, 1808, the corps was filled up by regular promotions to the full numbers authorized by the organic act of March 16, 1802, Jonathan Williams being the Chief Engineer and colonel, Jared Mansfield the lieutenant-colonel, and Alexander Macomb and Joseph G. Swift the majors; and, with the exception of Lieutenant-Colonel Mansfield, who had been surveyor-general of the Northwest Territory since November 1, 1803, with office at Cincinnati, and Lieut. Alden Partridge, who was retained at the Military Academy, all the officers of the corps were spread along the coasts in charge of active operations upon the fortifications. The office of the Chief of Engineers was in New York Harbor.

By the act of April 29, 1812, making further provisions for the Corps of Engineers, it was enacted:

SEC. 1. That there be added to the Corps of Engineers two captains; two first lieutenants; two second lieutenants; with the usual pay and emoluments according to their grades respectively; and one paymaster, to be taken from the subalterns of engineers, with the pay and emoluments of a regimental paymaster, and that there be attached to the said corps, either from the troops now in service or by new enlistments, as the President of the United States may direct, four sergeants, four corporals, one teacher of music, four musicians, nineteen artificers, and sixty-two men, which non-commissioned officers, musicians, artificers, and men, together with the artificers and men already belonging to the Corps of Engineers, shall be formed into a company, to be styled a company of bombardiers, sappers, and miners, and be officered from the Corps of Engineers, according as the commanding officer of that corps may, with the approbation of the President of the United States, direct.

SEC. 6. That so much of the twenty-sixth section of the act entitled "An act fixing the military peace establishment," passed the 16th day of March, 1802, as confines the selection of the command of the Corps of Engineers to the said corps be, and the same is hereby, repealed.

On the 6th of July, 1812, Lieut.-Col. Alexander Macomb, of the corps, was appointed colonel of the Third Regiment of Artillery, and on the 31st of July of the same year, Col. Jonathan Williams, Chief Engineer, resigned his commission in the Army in consequence of the dissatisfaction expressed by some of the artillery at his being assigned to the command of Castle Williams, New York Harbor, and the complications arising out of the same, which threatened to deprive him of this command, to which he felt himself entitled by his rank and services.

Under the operations of the act of April 29, 1812, and the casualties referred to above, Joseph G. Swift became colonel and Chief Engineer, Walter K. Armistead lieutenant-colonel, and George Bomford and Will-

iam McRee majors ; and the corps consisted of one colonel, one lieutenant-colonel, two majors, six captains, six first lieutenants, six second lieutenants, and a company of bombardiers, sappers, and miners, of one hundred and thirteen enlisted men.

War against Great Britain was declared June 15, 1812, and as many of the officers of engineers as could be furnished, were assigned to the staffs of the various generals commanding the military districts, with whom they served with credit during the war. The company of bombardiers, sappers, and miners, from the 9th of June, 1814, served along the Niagara frontier, and especially at Fort Erie, under Capt. and Bvt. Maj. Eleazer D. Wood, and in the sortie from Fort Erie.

By War Department regulations of February 28, 1815, signed by James Monroe, the commandant of the United States Corps of Engineers was announced as inspector of the Military Academy, and the appointment of a permanent superintendent for that institution was authorized. It was at this time, also, that the headquarters of the Engineer Department was established at New York.

By the act of March 3, 1815, fixing the military peace establishment, it was enacted—

That the military peace establishment of the United States shall consist of such proportions of artillery, infantry, and riflemen, not exceeding in the whole ten thousand men, as the President of the United States shall judge proper, and that the Corps of Engineers as at present established be retained.

Under the operations of this law, which was held to continue the Military Academy also, the Corps of Engineers resumed its duties upon the works of fortification along the coast, the value of which had been demonstrated during the late war, and the absence of which had been severely felt at many points of the seaboard.

By the act of April, 24, 1816, for organizing the general staff, &c., it is provided :

SEC. 11. That the Ordnance Department be continued as at present organized, under the act of February 8, 1815, and that ordnance officers be assigned to their duties with the staff of the Army, in the same manner as from the Corps of Engineers.

On the 29th of April, 1816, a joint resolution of the two Houses of Congress was passed, as follows :

That the President of the United States be, and he is hereby, authorized to employ, in addition to the Corps of Engineers as now established, a skillful assistant, whose compensation shall be such as the President of the United States shall think proper, not exceeding the allowance to the chief officer of that corps.

In accordance with this resolution, Gen. Simon Bernard, of the French Army, was attached to the Corps of Engineers, as an assistant engineer, with the pay and emoluments of a brigadier-general, the compensation which, under the existing laws, the Chief Engineer, Bvt. Brig. Gen. Swift, was then receiving.

On the 16th of November, 1816, the following regulation of the War



Department, constituting a "Board of Engineers for Fortifications," was issued :

A board shall be formed consisting of three officers of the Corps of Engineers, to be designated by the Secretary of War, and the officer of the Corps of Engineers assigned to the superintendence of the fortifications in any particular district, shall be attached to the board as a member, when it is acting in that district.

It shall be the duty of the officers of this board to examine, in conjunction, all those positions where important permanent works are or may be proposed to be erected. They shall select the proper sites for, and form the plans of all new works. Where fortifications have been commenced or are finished, they shall report how far the sites for such fortifications have been judiciously selected, or whether or not the works are adequate to the defense of the respective positions, and they shall propose such alterations or additions to them as may be deemed necessary. At those places where naval can come in aid of land defenses, the board shall call upon the naval officer who shall have been assigned by the Secretary of the Navy to co-operate with the board at that station, and who, during that co-operation, shall be a member of the board.

The report and plans adopted by the board, shall be submitted, with accurate estimates by the officers of the Corps of Engineers, to the chief of that corps.

The navy officer will report directly to the Secretary of the Navy.

Any officer of the board who may disapprove of the reports and plans agreed upon by the board, may, if it be deemed necessary, submit to his chief separate and distinct reports, accompanied by the necessary plans and estimates.

The original reports and plans agreed upon by the board, as well as those reported by any member of it, shall be submitted by the Chief of the Corps of Engineers, with such remarks as he may deem proper, to the Secretary of War, for final adoption, and they shall be deposited in the secret bureau of the Department of War.

The Chief of the Corps of Engineers may assign the officers of that corps attached to the board, to superintend the construction of particular fortifications, when such assignment will not interfere with their duties as members of the board.

The board shall be immediately organized, and shall consist of the following-named officers: Brigadier-General Simon Bernard, Colonel William McRee, and Lieutenant-Colonel J. G. Totten, and ———, of the Navy.

The Chief Engineer will at all times furnish the board with such plans, reports, &c., as may be in his possession in relation to existing or contemplated works, and he shall designate the point at which the board shall commence its operations.

The Secretary of the Navy will be advised through the War Department of the time when, and the place where, the board shall meet for the performance of any of the duties assigned to it by these regulations.

GEO. GRAHAM,
Acting Secretary of War.

The board of engineers constituted by this order has been continued until the present time, and the methods therein prescribed for the location, planning, and executing of works of fortification for our seaboard, have uniformly been such as are prescribed in these regulations.

Its existence and organization have been made known to, and authorized by Congress, as will appear from repeated executive communications, and resolutions in Congress, especially the joint resolution of April 20, 1818, the resolution of the Senate of February 13, 1817, and of the House of Representatives of December 11, 1817, and February 9, 1821. A long series of reports of this board, from 1818 down to the present time, which have been laid before Congress, has been the groundwork and basis of the system of permanent fortifications which have been

projected, and are still in progress of construction, along our maritime frontiers.

On the 3d of April, 1818, the headquarters of the Engineer Department were transferred from New York to Washington under the following order :

DEPARTMENT OF WAR,
April 3, 1818.

SIR: The President having directed that the Headquarters of the Engineer Department be fixed at the seat of Government, you will make your arrangements accordingly. As soon as practicable, you will order the distribution of the officers of the Engineer Corps, in such manner as the service of surveying sites, and the superintendence of the construction of works of defense may require.

Until you can be otherwise accommodated, you will procure suitable rooms for offices.

J. C. CALHOUN.

Gen. J. G. SWIFT.

On the 7th of April, 1818, regulations for the government of the Engineer Department were issued by the Secretary of War, Mr. Calhoun, with the approval of the President. About this time the Engineer Department included the Corps of Engineers, the Topographical Engineers, and the Military Academy. The Topographical Engineers were "arranged to the Engineer Department, and made subject to the orders of the Chief Engineer and commanding engineers," by formal orders dated July 2, 1818, but a number of the Topographical Engineers had for nearly two years been doing duty under the Chief Engineer, with the board of engineers, and on other stations.

On the 12th of November, 1818, Bvt. Brig. Genl. J. G. Swift, Chief Engineer, resigned his commission in the Army, and on the 22d of the same month Lieut. Col. W. K. Armistead, Corps of Engineers, assumed the command of the corps. On the 10th of March, 1819, Lieutenant-Colonel Armistead was appointed Colonel Corps of Engineers, and Chief Engineer, to rank from November 12, 1818.

By the act of March 2, 1821, to reduce and fix the military peace establishment, it was enacted :

SEC. 1. That from and after the first day of June next, the military peace establishment of the United States shall be composed of four regiments of artillery, and seven regiments of infantry, with such officers of engineers, of ordnance, and of the staff, as are hereinafter provided for.

* * * * *

SEC. 3. That the Corps of Engineers (bombardiers excepted) and the Topographical Engineers and their assistants, shall be retained in service as at present organized.

Under the operations of this act, Colonel Armistead resigned his office of Chief Engineer, and accepted the appointment of colonel of the Third Regiment of Artillery, while Brigadier and Brevet Major-General Alexander Macomb returned to service with the Corps of Engineers, as its Colonel and Chief Engineer. The enlisted men of the company of bombardiers, sappers, and miners, were either discharged, or transferred to the company of artillery which was stationed at West Point in its stead.

By the act of April 30, 1824, to procure the necessary surveys, plans, and estimates upon the subject of roads and canals, it was enacted :

That the President of the United States is hereby authorized to cause the necessary surveys, plans, and estimates to be made of the routes of such roads and canals as he may deem of national importance in a commercial or military point of view, or necessary for the transportation of the public mail, designating, in the case of each canal, what parts may be made capable of sloop navigation ; the surveys, plans, and estimates for each, when completed, to be laid before Congress.

SEC. 2. That, to carry into effect the objects of this act, the President be, and he is hereby, authorized to employ two or more skillful civil engineers, and such officers of the Corps of Engineers, or who may be detailed to do duty with that corps, as he may think proper, and the sum of thirty thousand dollars be, and the same is hereby, appropriated, to be paid out of any moneys in the Treasury not otherwise appropriated.

Under this act the "Board of Engineers for Internal Improvements" was organized. It consisted of Bvt. Brig. Gen. Simon Bernard, assistant engineer ; Lieut. Col. Joseph G. Totten, Corps of Engineers ; Mr. John L. Sullivan, civil engineer ; and had attached to it, for duty in the field, Major Abert, of the Topographical Engineers, and five assistant lieutenants ; Capt. McNeil, of the Topographical Engineers, and five assistant lieutenants ; and Mr. Shriver, civil engineer, had five civil-engineer surveyors. Capt. Poussin, of the Topographical Engineers, and Lieutenants Courteney and Dutton, of the Corps of Engineers, were on immediate duty with the board.

This board, with changes from time to time in its membership, continued until about 1832, when it seems to have been discontinued, but its functions since that date have been performed by special boards on river and harbor improvements, organized for temporary service upon particular works. During the continuance of the board of internal improvements a very great number of reconnaissances, surveys, plans, and estimates were made by the board, or under its directions, looking to the construction of works in the interest of commerce and navigation, and in its reports, the basis was laid for the system of river and harbor improvements, which have since added so much to the wealth of the nation.

On the 24th May, 1828, Col. Alex. Macomb, Chief Engineer, was appointed major-general in the Army, and was directed to take the command of the same.

In relinquishing the command of the Corps of Engineers, General Macomb published the following orders, dated Washington, May 28, 1828 :

Major-General Macomb, in leaving the office of Chief Engineer, which he has filled for the last seven years, to take command of the Army, feels it but an act of justice to the officers attached to the Engineer Department to express the great satisfaction he has experienced from their zealous and efficient co-operation in every branch of the service connected with his duties.

To the officers of the Corps of Engineers he makes his fullest acknowledgments for the judicious and faithful manner in which they have directed the construction of the fortifications, and other works confided to their superintendence, and for the unceasing

efforts to sustain, in whatever situation they have been placed, the honor and reputation of the corps.

To the officers of the Topographical Engineers, and those detailed from the line of the Army to assist in the surveys and reconnaissances relating to internal improvements, and to the gentlemen who have acted as civil engineers, Major-General Macomb in like manner tenders his acknowledgments.

To the commissioners and superintendents for laying out and constructing roads, the Chief Engineer has every reason for making a public acknowledgment of their faithful and valuable services.

To the superintendent and officers composing the staff of the Military Academy, he takes great pleasure in expressing his sense of their enlightened and successful exertions, to elevate and maintain the character of that valuable institution.

And to the members of the board of engineers for fortifications, and internal improvements, too much praise cannot be given for the industry and intelligence with which they have discharged the important and arduous duties committed to them.

In closing this order, the Chief Engineer cannot refrain from stating with proud satisfaction the fact, that during the period for which he has presided over the department, no loss has been occasioned to the public by any defalcation or neglect on the part of its officers, especially when it is considered that the amount of six millions of dollars has been disbursed in small sums and for items of a nature that require the greatest care and attention to satisfy the strictness of the accounting-officers, and to comply with the established regulations of the department.

The major-general will never cease to take great interest in the success and prosperity of the Engineer Department, and will, so far as it may be in his power, lend his aid to promote its usefulness, and, if possible, to increase its consideration in the public estimation.

ALEXANDER MACOMB,

Maj. Genl., Chief Engr. of the U. S.

General Macomb was succeeded as colonel and Chief Engineer by Lieut. Col. Charles Gratiot, of the Corps of Engineers.

On the 22d of June, 1831, by a regulation of the War Department; the Topographical Bureau of the Engineer Department was constituted a distinct Bureau of the War Department, and the officer in charge thereof, was directed to communicate directly with the Secretary of War, from whom he was to receive all his orders, and to whom he was to make all his reports.

On the 10th of August, 1831, Bvt. Brig. Gen. Simon Bernard, assistant engineer, resigned his office, and returned to France, Col. James Gadsden being appointed "Assistant engineer" by the President, in his place. This office was discontinued October 1, 1832, by virtue of the joint resolution of Congress of July 14, 1832.

By the act of July 5, 1838, to increase the present military establishment of the United States, and for other purposes it was enacted :

SEC. 2. That the President of the United States be, and he is hereby, authorized to add to the Corps of Engineers, whenever he may deem it expedient to increase the same, one lieutenant-colonel, two majors, six captains, six first and six second-lieutenants, and that the pay and emoluments of the said corps shall be the same as those allowed to the officers of the regiment of dragoons.

SEC. 3. That so much of the act passed the twenty-ninth day of April, 1812, entitled "An act making further provision for the Corps of Engineers," as provides that one paymaster shall be taken from the subalterns of the Corps of Engineers, be, and the same is hereby, repealed, and that the paymaster so authorized and provided be attached

to the Pay Department, and be in every respect placed on the footing of other paymasters of the Army.

SEC. 27. That it shall be the duty of the engineer superintending the construction of a fortification, or engaged about the execution of any other public work, to disburse the moneys applicable to the same, and as a compensation therefor may be allowed by the Secretary of War at the rate of two dollars per diem during the continuance of such disbursements: *Provided*, That the whole amount of emolument shall not exceed one per cent. on the sum disbursed.

But by the act of July 7, 1838, it was provided :

That no compensation shall be allowed to officers of the Engineer Department for disbursement of public money while superintending public works.

On the 6th of December, 1838, Col. and Bvt. Brig. Gen. Charles Gratiot was dismissed the service by an order of the President. This dismissal of General Gratiot arose from his refusal to settle his accounts in accordance with the decisions of the Comptroller of the Treasury, which General Gratiot believed were not in accordance with law. He was succeeded in the office of Chief Engineer by Lieut. Col. Joseph G. Totten, Corps of Engineers.

In accordance with the instructions of the Secretary of War of August 1, 1838, there were transferred, by the 18th of June, 1839, to the corps of Topographical Engineers, organized the preceding year, some seventy or more works of improvement of harbors and rivers along the Gulf, Atlantic, and Lake coasts.

By the act of May 15, 1846, for the organization of a company of sappers, miners, and pontoniers, it was provided :

That there be added to the Corps of Engineers one company of sappers, miners, and pontoniers, to be called engineer soldiers; which company shall be composed of ten sergeants, or master-workmen, ten corporals, or overseers, two musicians, thirty-nine privates of the first class, or artificers, and thirty-nine privates of the second class, or laborers; in all, one hundred men.

SEC. 2. That the pay and rations of the sergeants, or master-workmen, of said company shall be the same as those now allowed by law to the master-workmen employed by the ordnance department, excepting that the engineer-sergeants shall receive one ration only per day instead of one ration and a half; of the corporals, or overseers, the same as those now allowed by law to the armorers, carriage-makers, and blacksmiths employed by the ordnance department, excepting that the engineer-corporals shall receive one ration only per day, instead of one ration and a half; of the privates of the first class, or artificers, the same as those now allowed by law to the artificers employed by the ordnance department; of the privates of the second class, or laborers, the same as those now allowed by law to the laborers employed by the ordnance department, and of the musicians the same as those allowed by law to the musicians of the line of the Army; the said non-commissioned officers, privates, and musicians being, respectively, entitled to the same clothing and other allowances as are granted by law to non-commissioned officers, privates, and musicians of the artillery of the Army of the United States.

SEC. 3. That the said engineer-company shall be subject to the rules and articles of war, shall be recruited in the same manner and with the same limitation, and shall be entitled to the same provisions, allowances, and benefits, in every respect, as are allowed to the other troops constituting the present military peace establishment.

SEC. 4. That the said engineer-company shall be attached to and compose a part of the Corps of Engineers, and be officered by officers of that corps, as at present organ-

ized; they shall be instructed in and perform all the duties of sappers, miners, and pontoniers, and shall aid in giving practical instructions in these branches at the Military Academy; they shall, moreover, under the orders of the Chief Engineer, be liable to serve by detachments, in overseeing and aiding laborers upon fortifications or other works under the Engineer Department, and in supervising finished fortifications as fort-keepers, preventing injury and applying repairs.

SEC. 5. That the Chief Engineer, with the approbation of the Secretary of War, be authorized to regulate and determine the number, quality, form, dimensions, &c., of the necessary vehicles, pontons, tools, implements, arms, and other supplies for the use and service of said company as a body of sappers, miners, and pontoniers.

This company was recruited, drilled, and organized by the last of September, 1846, and was at once ordered to join General Taylor's command, arriving at Brazos Santiago on the 11th of October. It served in the siege of Vera Cruz, and participated in all the subsequent operations toward the city of Mexico until its capture, and remained in the country until its evacuation by our armies.

Twenty officers of the Corps of Engineers, including the Chief Engineer, served with distinction in Mexico during the war with that country.

By the act of March 3, 1851, it was enacted:

That the President be, and he is hereby, required to cause to be detailed from the Engineer Corps of the Army, from time to time, such officers as may be necessary to superintend the construction and renovating light-houses.

By the act of August 31, 1852, making appropriations for light-houses, &c., &c., a Light-House Board was constituted, and provision made that three of its members should be officers of engineers.

The connection of engineer-officers with the construction of our light-houses dates back as far as 1831, at which time certain moneys appropriated for lights upon the lakes were placed by the Treasury Department in the hands of officers of the engineers for disbursement, and from that period, to the organization of the Light-House Board, there were always a number of engineer-officers engaged on this duty—the construction, by law, in some cases, having been directed to be in the hands of the engineers.

By the act of March 3, 1853, it was directed:

That whenever any lieutenant of the Corps of Engineers, Corps of Topographical Engineers, or Ordnance shall have served fourteen years' continuous service as lieutenant he shall be promoted to the rank of captain: *Provided*, That the whole number of officers in either of said corps shall not be increased beyond the number now fixed by law.

By the act of August 3, 1861, it was provided:

SEC. 3. That there shall be added to each of the Corps of Engineers and Topographical Engineers, three first and three second lieutenants, to be promoted thereto in accordance with the existing laws and regulations.

SEC. 4. That there shall be added to the Corps of Engineers three companies of engineer-soldiers, to be commanded by appropriate officers of said corps, to have the same pay and rations, clothing, and other allowances, and to be entitled to the same benefits in every respect as the company created by the act for the organization of a company of sappers and miners and pontoniers, approved May 15, 1846.

And each of the four companies of engineer-soldiers shall hereafter be composed of ten

sergeants, ten corporals, two musicians, sixty-four privates of the first class, or artificers, and sixty-four privates of the second class—in all, one hundred and fifty men.

By the act of August 6, 1861, it was provided :

That there shall be added to each of the Corps of Engineers and Topographical Engineers, by regular promotion of their present officers, two lieutenant-colonels and four majors.

By the act of March 3, 1863, it was provided :

That the Corps of Topographical Engineers, as a distinct branch of the Army, is hereby abolished, and from and after the passage of this act is merged into the Corps of Engineers, which shall have the following organization, viz: One Chief Engineer, with the rank, pay, and emoluments of a brigadier-general; four colonels, ten lieutenant-colonels, twenty majors, thirty captains, thirty first lieutenants, and ten second lieutenants.

SEC. 2. That the general officer provided by the first section of this act shall be selected from the Corps of Engineers, as therein established, and that officers of all lower grades shall take rank according to their respective dates of commission in the existing Corps of Engineers or Corps of Topographical Engineers.

SEC. 3. That no officer of the Corps of Engineers below the rank of field-officer shall, hereafter, be promoted to a higher grade before having passed a satisfactory examination before a board of three engineers senior to him in rank; and should the officer fail at such examination, he shall be suspended from promotion for one year, when he shall be re-examined, and, upon a second failure, shall be dropped by the President from the Army.

Under the operations of this act, Col. Joseph G. Totten was appointed Chief Engineer and Brigadier-General Corps of Engineers.

On the 22d April, 1864, Brig. Gen. and Bvt. Maj. Gen. Joseph G. Totten, Chief Engineer, U. S. A., died, and was succeeded by Col. Richard Delafield, Corps of Engineers, in that office.

By the act of June 20, 1864, it was provided :

SEC. 4. That there be added to the Battalion of Engineers, one sergeant-major, who shall be paid thirty-six dollars per month, and one quartermaster-sergeant, who shall also be commissary-sergeant, who shall be paid twenty-two dollars per month.

During the civil war the Corps of Engineers was actively engaged, both upon staff duty with the troops in the field, and as officers of volunteers in command of troops.

Thirty-three officers, who either held or had held commissions in the Corps of Engineers, were appointed General Officers in command of troops. Of these, three became major-generals, and three brigadier-generals, in the Regular Army; fifteen, were major-generals of volunteers, and twelve, brigadier-generals of volunteers; eight, of the thirty-three, commanded Armies, and ten others Army Corps. At least eight general officers, in the confederate armies, had been officers of the Corps of Engineers.

By the act of July 13, 1866, it was provided :

SEC. 6. That the Superintendent of the United States Military Academy may hereafter be selected, and the officers on duty at that institution detailed, from any arm of service, and the supervision and charge of the academy shall be in the War Department, under such officer or officers as the Secretary of War may assign to that duty.

In compliance with this law, the supervision and charge of the Military Academy passed from the Corps of Engineers to the War Depart-

ment, and the superintendency from the exclusive detail of officers of engineers. Upon the promulgation of this law, the following order was issued by the Chief Engineer :

In conformity with the act of Congress approved July 13, 1866, and with general orders from the War Department of the 30th July, 1866, the control and management of the United States Military Academy, have passed from the Corps of Engineers.

Sixty-four years have elapsed since the academy, conceived by Washington in the last century, was established, (in 1802,) at West Point and committed by President Jefferson to the fostering care of the Corps of Engineers as a special school for that arm. While keeping in view the original object, the thorough scientific military education of engineers, the corps has not failed to recognize the larger demands of the nation made upon the academy from time to time by the results of experience in war, and study and observation in peace. In 1812 it accordingly developed and adapted the academy to meet the wants of all branches of the military service, so far as one institution can supply them. Upon the fundamental principles then established, it has conducted the academy to the present time, shaping and perfecting it to meet its special functions, and to keep pace with the advancement of science and art, and the corps may now, in parting with it, confidently ask that the tree may be judged by its fruits.

The battle-fields of every war from 1812 to the suppression of the late rebellion, and the ever-recurring conflicts with the savage tribes, speak plainly of the ability and gallantry of the graduates of the academy, and the walks of honor and usefulness in the various fields of public and private civil life have been adorned by its élèves.

Under the sanction of law the academy ceases to have any special connection with the Corps of Engineers. In announcing this fact to his officers, the Chief Engineer enjoins it upon them to give hereafter, as they have done heretofore, their best efforts for the continued prosperity and success of the academy, and to contribute all in their power to aid those to whom it may henceforth be confided.

“RICHARD DELAFIELD,

Bvt. Maj. Gen. and Chief Engineer U. S. A.”

By the act of July 28, 1866, to increase and fix the military peace establishment of the United States, it was provided :

SEC. 19. That the Corps of Engineers shall consist of one Chief of Engineers, with the rank, pay, and emoluments of a brigadier general, six colonels, twelve lieutenant-colonels, twenty-four majors, thirty captains, and twenty-six first and ten second lieutenants, who shall have the pay and emoluments now provided by law for officers of the Engineer Corps.

SEC. 20. That the five companies of engineer-soldiers and the sergeant-major and quartermaster-sergeant, heretofore prescribed by law, shall constitute a battalion of engineers to be officered by officers of suitable rank detailed from the Corps of Engineers; and the officers of engineers, acting respectively as adjutant and quartermaster of this battalion, shall be entitled to the pay and emoluments of adjutants and quartermaster of cavalry.

Upon the 8th of August, 1866, Brig. Gen. and Bvt. Maj. Gen. Richard Delafield, Chief of Engineers, was retired from active service, by direction of the President, and was succeeded in the office of Chief of Engineers by Lieut. Col. Andrew A. Humphreys, Corps of Engineers, brevet major-general, United States Army.

By the act of February 12, 1867, the pay and allowances of the quartermaster-sergeant of the battalion of engineers were fixed as the same as those allowed to the sergeant-major of the battalion.

By the act of March 2, 1867, it was provided :

SEC. 2. That the office of Commissioner of Public Buildings is hereby abolished, and the Chief Engineer of the Army shall perform all the duties now required by law of

said Commissioner, and shall also have the superintendence of the Washington Aqueduct, and all the public works and improvements of the Government of the United States in the District of Columbia unless otherwise provided by law.

And by the act of March 29, 1867, it was enacted :

SEC. 7. That the several sums of money heretofore appropriated to be expended under the direction of the Commissioner of Public Buildings be transferred to, and may be expended under the direction of, the Chief Engineer of the Army, or such officer of the Engineer Corps as he may direct.

By the act of March 3, 1869, it was enacted :

SEC. 6. That until otherwise directed by law there shall be no new appointments and no promotions * * * in the Engineer Department. * * *

By the act of July 15, 1870, sec. 2, the President was directed to reduce the number of enlisted men in the Army to thirty thousand, the reduction to be effected by the 1st of July, 1871. Under the operations of this law the battalion of engineers was reduced to 354 enlisted men, and four organized companies, the fifth being retained as a skeleton only.

By the act of January 10, 1872, it was provided :

That so much of section six of an act entitled "An act making appropriations for the support of the Army for the year ending June thirtieth, eighteen hundred and seventy, and for other purposes," approved March third, eighteen hundred and sixty-nine, as prohibits promotions and new appointments in the Engineer Department, be, and the same is hereby, repealed: *Provided*, That nothing herein contained shall authorize promotion in said Department above the grade of colonel.

By the act of February 1, 1873, it was provided :

That the enlisted men of engineers in the Army, are hereby placed on the same footing, with respect to compensation for extra-duty service, as the other enlisted men of the Army, and that all laws or parts of laws in conflict with this provision be, and the same are hereby, repealed.

By the act of June 16, 1874, making appropriation for the support of the Army for the year ending June 30, 1875, it was provided that the number of enlisted men in the Army, including Indian scouts, but excluding the Signal-Service, should not exceed 25,000 men. Under the operations of this law the number of enlisted men authorized in the battalion of engineers was reduced to 200, and the companies organized to four.

By the act of June 20, 1874, for the government of the District of Columbia, and for other purposes, it was provided :

SEC. 3. That the President of the United States shall detail an officer of the Engineer Corps of the Army of the United States, who shall, subject to the general supervision and direction of the said board of commissioners, have the control and charge of the work of repair and improvement of all streets, avenues, alleys, sewers, roads, and bridges of the District of Columbia; and he is hereby vested with all the power and authority of, and shall perform the duties heretofore devolved upon, the chief engineer of the board of public works. * * *

HISTORICAL SKETCH OF THE CORPS OF TOPOGRAPHICAL ENGINEERS.

As the Corps of Topographical Engineers and its troops were united with the Corps of Engineers in 1863, it is proper that mention should be made of the organization, in the Army of the Revolution, which performed those duties in after years devolved, as a portion of their functions, upon the Corps of Topographical Engineers of the Army.

The resolutions of July 25, 1777, first authorized the appointment in the Army of such officers as follows :

Resolved, That General Washington be empowered to appoint Mr. Robert Erskine, or any other person that he may think proper, geographer and surveyor of the roads, to take sketches of the country, the seat of war, and to have the procuring, governing, and paying the guides employed under him, the general to fix the pay of the said geographer, &c., and the allowance that shall be made to the guides.

On December 4, 1780, the following resolution was passed :

Resolved, That Mr. Simeon De Witt be appointed geographer to the Army, in the room of Robert Erskine, deceased.

On July 11, 1781, the following resolution was passed :

Resolved, That the geographer to the main Army, and also the geographer to the southern army, be styled "Geographer to the United States of America," and commissioned and considered as such, and that they perform such service as the Commander-in-Chief, and commanding officer of the southern army may judge necessary to assign them respectively.

On November 12, 1782, the following action was taken in Congress :

Whereas, no provision has been made by Congress for the geographers to the Armies of the United States: Therefore,

Resolved, That the geographer to the main Army, and the geographer to the southern department, be each of them allowed \$60 per month, three rations per day, forage for two saddle-horses, one two-horse covered wagon, six and two-third dollars per month for a servant, for whom they shall be entitled to draw one ration per day, and the clothing allowed to a private soldier; that the assistant geographers, if such officers shall be judged necessary by the Commander-in-Chief, be allowed \$30 per month, one ration per day, and forage for one saddle-horse; that when chain-bearers shall be employed, not being soldiers, they shall each be allowed half a dollar per day.

The compensations given above, were those which pertained to the grades in the Army, of colonel and captain respectively.

Upon the close of the war and the disbanding of the Army, the geographer of the United States was continued in office as surveyor of the public lands, as appears from the following resolutions :

MAY 27, 1785.

Resolved, That the geographer of the United States be continued in office for a term not exceeding three years, and that he be allowed during his continuance in office, six dollars per day, for his services and expenses.

JUNE 9, 1785.

Resolved, That the Board of Treasury advance to Thomas Hutchins, geographer of the United States, \$700 on account.

That the Board of Treasury advance Thomas Hutchins, geographer of the United

States, \$6,000, for which he is to be accountable, to be applied by him, from time to time, to the use of the several officers concerned in carrying into execution, the ordinance for ascertaining the mode of disposing of lands in the western territories.

After the establishment in 1794 of a corps of artillerists and engineers, and the formation by them of a school at West Point, the necessity of topographical engineers in our service, was recognized in the War Department, as will appear from the following extract from some notes furnished the Committee on the Military Establishment in Congress, by Col. Timothy Pickering, late Secretary of War, dated February 3, 1796:

* * * * *

The corps of artillerists and engineers appears to be an important establishment. To become skillful in either branch of their profession will require long attention, study, and practice, and because they can now acquire the knowledge of these arts advantageously only from the foreign officers, who have been appointed with a special reference to this object, it will be important to keep the corps together for the present, as far as the necessary actual service will permit. Its principal station may then become a school for the purpose mentioned. To render this school more complete, provision is wanting for a *geographical engineer and draughtsman*. Such a one may now be retained for the establishment of a captain.

No officers with the special functions of topographical engineers were, however, provided for our armies until the early part of the war of 1812 with Great Britain, when Congress by an act for the better organization of the general staff of the Army, passed March 3, 1813, made provision for eight topographical engineers and as many assistants, the former to have the brevet rank of majors, the latter of brevet captains; the topographical engineers to be taken from the line, or not, as the President might deem expedient, the assistants to be taken from the line; and any officers taken from the line and transferred to the staff, to receive only the pay and emoluments attached to their rank in the staff, but their transfer to be without prejudice to their rank and promotion in the line according to their said rank and seniority.

The President, under the authority of this law, made the following appointments, viz:

Topographical Engineers.

	Appointed.	Rank in line.
Maj. John Anderson.....	April 12, 1813.....	Capt. 19th Inf'y.
Maj. Paul H. Perrault.....	April 12, 1813.....	
Maj. Isaac Roberdeau.....	April 29, 1813.....	
Maj. Simon Z. Watson.....	August 3, 1813.....	

Assistants.

	Appointed.	Rank in line.
Capt. Thomas Clark.....	April 1, 1813.....	2d lieutenant. 2d Art.
Capt. James Kearney.....	April 12, 1813.....	3d lieutenant. 5th Inf.
Capt. Daniel Rose.....	July 20, 1813.....	3d lieutenant. 21st Inf.
Capt. Benjamin Conner.....	August 3, 1813.....	3d lieutenant. 1st Art.

Of these officers, Majors Anderson and Roberdeau, and Captains Clark, Kearney, and Rose were assigned to the northern division of the

Army, and Majors Perrault and Watson, with Captain Connor, to the southern, under the following instructions published in May, 1813 :

Duties of Topographical Engineers and their assistants.

To make such surveys, and exhibit such delineations of these as the commanding-general shall direct; to make plans of all military positions (which the Army may occupy) and of their respective vicinities, indicating the various roads, rivers, creeks, ravines, hills, woods, and villages to be found therein; to accompany all reconnoitering parties sent out to obtain intelligence of the movements of the enemy or of his position, &c.; to make sketches of their route, accompanied by written notes of everything worthy of observation thereon; to keep a journal of every day's movements, when the Army is on march, noticing the varieties of ground, of buildings, of culture, and the distances and state of the road between given points throughout the march of the day, and, lastly, to exhibit the positions of contending armies on fields of battle, and the disposition made, whether for attack or defense.

Major Watson died the 1st of February, 1814, and the appointment of Benjamin Connor as captain was negatived by the Senate in March of 1814. On the 1st January, 1815, the Topographical Department consisted of the following officers, to wit:

Maj. John Anderson; Maj. Paul H. Perrault; Maj. Isaac Roberdeau; Maj. J. C. Warren, appointed 30th March, 1814; Maj. John J. Abert, appointed 22d November, 1814; Capt. Thomas Clark; Capt. James Kearney; Capt. Daniel Rose; Capt. Gamaliel Pease, appointed 15th July, 1814, second lieutenant, First Infantry.

And the new appointments were attached to the southern division of the Army.

In the year 1815, and until the termination of the war, the same officers remained in service. On the conclusion of peace under the Treaty of Ghent, and the consequent hasty reduction of the Army at the close of the session of Congress, the Topographical Engineers being considered as exclusively appertaining to the general staff, were unprovided for by the act affixing the military peace establishment passed on the 3d March, 1815, and were mustered out of service June 15, 1815. This act, however, authorized the President provisionally to retain certain officers whose services might be of importance, and who might not be included in the details of the law.

As the reports of the Topographical Engineers stationed on the frontiers were made to commanding generals of divisions or detachments, under circumstances unfavorable to a perfect and minute delineation of the objects of their attention, the peace found them in an unfinished state, although the notes and sketches of many parts of the country had been obtained with much labor and preserved with care. This circumstance being reported to the President, as well as the importance on every other consideration of retaining this branch of the Army on the peace establishment, when the duties that would necessarily be assigned to it could be with better success pursued, he, on the 19th June, 1815, retained two majors, Anderson and Roberdeau, who were directed, under special orders from the War Department, to complete the surveys on

the northern frontier and Lake Champlain, with some other matters which the unexpected close of the war had suspended, and to report to the Chief Engineer, General Swift, for the execution of this duty.

These duties were performed, but, by extending those surveys and geological researches, the importance of the continuance of the corps was proportionally increased, and the succeeding Congress found them still more deeply engaged in these useful investigations than during the late war they were permitted advantageously to pursue.

As the authority of Congress was necessary to the re-establishment of the corps, and presuming that sufficient information had not been imparted to lead to a true knowledge of its usefulness, and proper attention in the time of peace as well as of war, the following memoir was prepared with a view of directing the attention of Congress to the subject, as one of much importance in the development of the civil as well as military resources of the nation :

Memoir.

Engaged in the execution of duties, the importance of which on a large scale appears not yet to be sufficiently appreciated, it would be deviating from the practice of all topographers not to present such views of the performance of their functions in the public service as are important to the nation, and which the particular circumstances of the country and the infancy of this branch of public economy so forcibly impress as a military and civil or political duty.

The undersigned have in the course of the war had to perform necessary services in the Topographical Departments at different points; at the close of the contest, they had, conjointly, to make topographical surveys where the want of accurate information had been felt in the progress of it, and which would be again experienced should war at any future period be renewed.

Under an order of June last, with which the undersigned were honored by the President of the United States, a considerable portion of the northwestern and western Territories has been critically explored by them. As much of this reconnoiter as the limited time since their return would admit of, has been hastily sketched, which, together with the different detailed reports on the subject, have been transmitted to General Swift. The intention, therefore, of this memoir is merely the reflections which their sense of duty imposes upon them to offer, with the utmost deference, to the chief of the Department, for the consideration of the President of the United States.

The duties of the topographical department of an army embrace a variety of subjects; the views of ground and the facilities for movements of every kind; the profiles of positions and the routes which are, or may be, opened are usually considered by those who have not entered into the spirit of the science as comprehending the whole of its duties. But a great portion of topographical research would be lost to the public were its functions so limited or were they confined to the mere selection for sites of camps or fields of action. It becomes, therefore, the duty of those who have been honored with public confidence in this department, if they have not the opportunity of carrying into operation the functions of their immediate stations on that scale or to that extent which the present deficiency of this kind of information so imperiously calls for, that they should at least point out what they conceive to be necessary for the strength of the country, for knowledge is in no case so really identified with strength as in the knowledge of the country, which is our own, where it is weak and open to assault, where it is defensible, and, in short, where its resources in a military view are feeble, and where and how susceptible of defense.

It is in this point of view that it becomes associated with the engineers of fortifica-

tion. It is here that their functions sustain and perfect each other; and it is in this view that it will be best seen how necessary the subdivision of the science, like the subdivision of labor, contribute to the perfection of each other and of the whole.

The engineers of works operate on fixed positions; their duties may be considered sedentary, while the topographer has to trace the routes, not only of the army to which they belong, but to preoccupy, reconnoiter, and know every route by which an enemy may approach. Under this view of their respective duties, among others equally impressive, the expediency of placing both departments under one chief is, with great deference, submitted.

But yet these are not all the duties which properly belong to the Topographical Department. Much of its utility would be thrown away if their functions commenced and ceased with immediate military action. It is through this department that the experience of a campaign past is rendered subservient to future ones, or that the same duties are not to be performed in detail on the same subjects with every new army. The recording topographical details for future use, is one of the great economical functions of this Department.

Nor does it cease here; the same intelligence which surveys the roads and ravines, the hills, woods, valleys, and declivities, the morasses, and mounds, which so much influence military operations and often decide the fortunes of war, requires the association of other inquiries, which bear analogy to statistical science, and which renders that branch of knowledge a necessary part of military record. A numerous population, in a country which is to become the theater of operations, present many considerations which may produce very different results from those presented by a simple description, or the most minute details of the ground. The knowledge of the condition, as well as numbers of the population, comes within the same scope; a fertile or a sterile country, even the temper, dispositions, and habits of the people, their mode of life, their food, stock, and civil condition in relation to their own government, become a part of the objects upon which the topographer has to report, because without these a knowledge of the ground alone would be insufficient.

Under such views, it may be perceived that it is of the utmost moment to render the circle of the duties of this branch as complete as possible; that its records should present a sort of civil history, as well as a picturesque detail, and the more perfect these several branches are combined and developed the greater will be the advantage to the country.

The immediate objects of the present memoir are the surveys and reconnoiter executed by the undersigned within the past year, a part of which, with reports on some of the subjects, have been presented to Brigadier-General Swift. They embrace topographical surveys and views of detached points only, but these of great importance with a view to future precaution. The first contains surveys on the Champlain frontier; the second, surveys on the Cadaraqui; a third of Oswego, on Lake Ontario; and the fourth on the scenes of those brilliant operations which have rendered both shores of the Niagara Strait memorable in our annals. Of these several objects drawings have been prepared, though not in that complete and finished state which their importance demands. But the field-notes and sketches are so ample and minute, as to require only the necessary time and labor, to place them in a state that will not be inferior in usefulness to those of any other nation. The drawings and field-notes of Mackinaw and Detroit are equally minute, and require time only to arrange them perfectly.

In some of those surveys it has presented to our reflection, that the positions which have been established in former wars between France and England were selected with very great skill, so much so, that were the country to be settled anew, by a scientific people, the same sites would be preferred to any others which are contiguous to them. Among these may be pre-eminently noticed Crown Point, Kingston in Canada, Oswego, and Niagara, in the State of New York, all which were originally selected by the French, and improved, or occupied subsequently by the British.

Upon commencing a topographical tour on the waters of Lake George, on the route

to Champlain, the principal point which presented itself to our consideration was Crown Point. The idea of General Lloyd, though crude in its details, was very sound in its design; that of operations by Lake Champlain and Albany, so as to separate the Eastern from the Middle States by the Hudson. It was attempted by Burgoyne, and menaced, with equal futility, by Prevost, in the late war. Independently of those political causes which have existed, and may yet exist, to encourage the renewing of such a design, (for nations, like individuals, are often disposed to retrieve disasters upon the very ground on which they suffered,) Crown Point appears to have been not duly regarded in the late war, for it presents the best position for a depot, with all the advantages of military defense.

These views, which might be enlarged to a voluminous extent, are respectfully submitted as evidences of what may be accomplished in a short period, by attentions well directed and employed. But the field-notes and sketches are valuable, both from their accuracy and minuteness, and because, above all, they are the fruit of great toil, which toil must be renewed on the same subjects should any future war arise, if the knowledge now possessed be not profitably used.

The undersigned do not hesitate to recommend, without the apprehension of being mistaken, or of its being attributed to any other than public motives, the completion of a frontier military survey of the whole interior and exterior of the United States. This work, together with the duties necessarily arising out of the survey of the sea-coast, and the establishment of the boundary-line between the United States and the British Provinces in Canada, can be executed with the best effect by a Corps of Topographical Engineers, under the immediate direction of the Chief of the Engineer Corps, and by them, with the employment of the military, at much less expense than that which these duties could be obtained from persons employed out of civil life in those services.

All which is respectfully submitted.

JOHN ANDERSON,
Topographical Engineer.

I. ROBERDEAU,
Major Topographical Engineers.

The Hon. WILLIAM CRAWFORD,
Secretary of War.

WASHINGTON, *January 16, 1816.*

By the act of April 24, 1816, for organizing the general staff, and making further provisions for the Army of the United States, three Topographical Engineers, and two assistants were provided for each division, which re-established the corps to its former numbers and rank, still connecting it with the general staff of the Army.

The corps formed under this arrangement consisted of the following officers:

Maj. John Anderson, to rank from April 12, 1813; Maj. Isaac Roberdeau, to rank from April 29, 1813; Maj. John J. Abert, to rank from November 22, 1814; Maj. James Kearney, appointed April 29, 1816; Maj. Stephen H. Long, appointed April 29, 1816; Maj. John Wilson, appointed April 29, 1816.

There were no assistant Topographical Engineers appointed at this time. Of the above officers, Majors Anderson, Roberdeau, and Abert were attached to the northern, and Majors Kearney, Long, and Wilson to the southern division of the Army.

The Board of Engineers for Fortifications having been organized in November of 1816, several officers of the Topographical Engineers

were at once attached to the board for the purpose of making the necessary surveys. By the close of 1817 the following officers of Topographical Engineers had been detailed for duty with this board :

Maj. Isaac Roberdeau, Maj. John J. Abert, Maj. James Kearney, Capt. William T. Poussin aid-de-camp to General Bernard.

On the 2d of July, 1818, the following General Order, dated Adjutant and Inspector General's Office, was issued :

The Topographical and assistant Topographical Engineers are arranged to the Engineer's Department, and are made subject to the orders of the chief and commanding engineers.

When orders or instructions are given to such as are now attached to the command of any general, the communication will be made through him.

By order.

DANIEL PARKER,
Adjutant and Inspector General.

NOTE.—I send this to the Adjutant Generals of Divisions.

D. P.

The Topographical Engineers were thus constituted a part of the Engineer Department, and at this time were engaged in explorations in the West, and in surveys along the seaboard for fortifications.

In August, 1818, a Topographical Bureau was established by the War Department, at Washington, and Major Roberdeau was stationed there, to take charge of its arrangement under the immediate direction of the Secretary of War and the Chief Engineer. At this period is to be dated the origin of an institution which has been so important to the future demands of the Government.

By the act of March 2, 1821, to reduce and fix the military peace establishment of the United States, it was provided—

That the Topographical Engineers and their assistants shall be retained in service as at present organized.

That organization allowed six officers with the rank of brevet major, and four with the rank of brevet captain, which, by the above act, was fixed without regard to the number of divisions or brigades in the Army.

By the act of April 30, 1824, organizing a Board of Engineers for Internal Improvements, the additional duties devolved upon the officers of Topographical Engineers, in the surveys and reconnaissances needed by this board, were of such magnitude, that a large number of officers from the line of the Army, as well as civil engineers, had to be employed.

During the season of 1824, twenty-five officers of the line of the Army, and thirty civilians were employed under the directions of Topographical Engineers upon the various surveys in progress, and from this time to the organization of the Corps of Topographical Engineers, in 1838, about this number of officers and civil-engineer assistants, were annually employed on topographical duty.

After the death of Lieut. Col. Isaac Roberdeau, on the 15th of January, 1829, Lieut. Col. J. J. Abert was ordered to Washington by General Gratiot, to take the charge of the Topographical Bureau of the Engineer

Department, and on the 20th of February, 1829, was appointed assistant to the Chief Engineer—

In relation to such reconnaissances and surveys, both for military and civil purposes, as may be entrusted to Topographical Engineers, assistant Topographical Engineers, or civil engineers, under the direction of the Engineer Department.

On the 10th June, 1830, the following order, by direction of the Secretary of War, was issued by the Chief Engineer :

The Board of Engineers for Internal Improvements is hereby organized, to consist of the following officers, viz :

General Bernard, assistant engineer; the Topographical Engineer in charge of the Topographical Bureau of the Engineer Department; such officers of the Corps of Engineers as may be at any time attached to the board by the Chief Engineer.

The engineer or other officer, civil or military, who may have conducted the surveys relative to any project submitted to the board, will be considered a member of the board during the preparation of the report on such projected work, and for that purpose only.

The board will, as heretofore, report to and receive their orders from the Engineer Department.

Major Poussin will continue to act as assistant to the board.

In consequence of the additional duties hereby assigned to the officer in charge of the Topographical Bureau, that part of engineer order No. 3, dated the 20th of February, 1829, which requires him to perform the duties of assistant to the Chief Engineer in certain cases, is rescinded.

By order of the Secretary of War.

C. GRATIOT,

Brigadier-General.

On the 21st June, 1831, the following regulation was issued by the War Department :

1. The Topographical Bureau will hereafter constitute a distinct bureau of the War Department, and the officer in charge thereof will communicate directly with the Secretary of War, from whom he will receive all his orders and to whom he will make all his reports.

2. All reports, returns, and communications from officers of the Topographical Engineers, or others on topographical duty, will hereafter be made to the officer in charge of the Topographical Bureau, through whom, in addition to his previous duties, all orders to officers of the Topographical Engineers, or others on topographical duty, will hereafter pass.

3. The officer in charge of the Topographical Bureau will comply with any application from the Chief Engineer for any original document in said bureau, or for copies of the same, and for surveys for purposes of fortifications.

P. G. RANDOLPH,

Acting Secretary of War.

By the act of July 5, 1838, to increase the present military establishment of the United States and for other purposes, it was enacted :

SEC. 4. That the Corps of Topographical Engineers shall be organized and increased by regular promotions in the same, so that the said corps shall consist of one colonel, one lieutenant-colonel, four majors, ten captains, ten first lieutenants, and ten second lieutenants.

SEC. 5. That vacancies created by said organization over and above those which can be filled by the present corps, shall be taken from the Army, and from such as it may be deemed advisable of the civil engineers employed under the act of the 30th

April, 1824; that the pay and emoluments of the officers of said corps shall be the same as are allowed to officers of similar rank in the regiment of dragoons.

SEC. 6. That the authority to employ civil engineers in the act of the 13th of April, 1824, be and the same is hereby repealed after the passage of this act.

Under the operations of this act, Brevet Lieut. Col. J. J. Abert, Topographical Engineers, became colonel of the Corps of Topographical Engineers, and from this time the works of rivers and harbors and roads, and other works assigned to the corps for construction, were largely increased.

During the Mexican war some twenty officers of the corps served with distinction in the armies operating in that country.

The act of March 3, 1851, causing details of engineer officers to be made by the President, for the purpose of superintending the construction and renovating light-houses, as well as the act of August 31, 1852, creating a Light-House Board, applied to the Corps of Topographical Engineers, and its officers were detailed equally with the officers of the Corps of Engineers upon that duty.

By the act of August 3, 1861, three first and three second lieutenants were added to the corps, and by the act of August 6, 1861, there were added, by regular promotion to the corps, two lieutenant-colonels and four majors.

Section 2 of this act further provided :

That there shall be added to the Corps of Topographical Engineers one company of soldiers, to be commanded by appropriate officers of said Corps, to have the same pay and rations, clothing, and other allowances, and to be entitled to the same benefits in every respect, as the company created by the act for the organization of a company of sappers and miners and pontoniers, approved May 16, 1846. The said company shall be subject to the rules and articles of war, and shall have the same organization as the companies of engineer-soldiers attached to the Corps of Engineers.

On the 9th September, 1861, Colonel J. J. Abert was retired from active service, and was succeeded as colonel, Corps of Topographical Engineers, by Lieut. Col. Stephen H. Long, of that corps.

By the act of March 3, 1863, the Corps of Topographical Engineers was merged in the Corps of Engineers, producing an organization that would seem to have been contemplated by Majors Anderson and Roberdeau, the senior officers of this corps, in their memorial of January 16, 1816.

GENERAL REMARKS.

The above historical sketches of the Corps of Engineers have touched mainly upon the laws and regulations which have governed their organizations and administrations in the Army of the United States, but no history of the Corps of Engineers could be complete that did not relate somewhat in detail the labors they have performed.

To do this would require a more extended paper than the time which can be given to this report will admit.

From the earliest period, the several organizations of engineers

which we have had in our service, have invariably and exclusively made the surveys for, and the plans of, our seacoast defenses, whether of the temporary character which were built up to 1818, or of the permanent character which have been since that time projected, and have superintended their construction and the disbursement of the funds appropriated by Congress for the same.

Up to about 1831, its officers were to a great degree the repositories, in this country, of that knowledge which was requisite for the purpose of making accurate surveys. The location and construction of the roads, canals, and bridges built for the development of the resources of the country, and the accurate methods of surveying, geodetic, topographic, and hydrographic, now in use, are in a great measure due to the talents and labors of its officers.

Almost all the great routes of internal communication in the interests of commerce and speedy transit, now in existence in the country, were first explored, located, and projected by the officers of this corps. The files of the bureau of the corps in Washington, and the congressional documents, are rich in reports upon the works of this character, that have been examined into under authority of law, by the Corps of Engineers.

In the matter of the improvement of rivers and harbors, in the interest of commerce, the Corps of Engineers has had almost the exclusive control, and the information on this subject contained in reports of its officers, from the early years of this century to the present time, now filed in the bureau of the corps, is a monument to its labors, and a most valuable collection of precedents to be used in the future prosecution of such works.

The surveys, examinations, and constructions which have been made by officers of the corps, have not been confined to such matters as are solely in charge of the War Department. From time to time, the State Department, the Navy Department, the Treasury Department, and the Interior Department have employed its officers in the running of boundary lines, and the surveys for the maps necessary to be used in delicate diplomatic negotiations; in the surveys for, and the construction of, dock-yards; the surveys for canal-routes across the Isthmus of Panama; upon astronomical observations in the interests of science; in the survey of the coasts, the planning and construction of light-houses and other fixed aids to navigation; the planning and construction of public buildings, of custom-houses, post-offices, marine hospitals, &c.; and especially in the construction of the Capitol, the General Post-Office, and the Washington Aqueduct, in this city.

Scarcely a branch of engineering, whether military or civil, can be mentioned, that has not been improved and expanded by the study and labors of the officers of this corps, so that the anticipations of the Secretary of War, James McHenry, in his communication of January 31, 1800, urging the importance of establishing by law a military academy and a corps of engineers, before quoted in this paper, would

seem to have been realized to the letter, in the history of this corps. He says:

We must not conclude, from these brief observations, that the services of the engineer is limited to constructing, connecting, consolidating and keeping in repair fortifications. This is but a single branch of their profession, though, indeed, a most important one. Their utility extends to almost every department of war, and every description of general officers, besides embracing whatever respects public buildings, roads, bridges, canals, and all such works of a civil nature. I consider, it, therefore, of vast consequence to the United States that it should form in its own bosom, and out of its own native materials, men qualified to place the country in a proper posture of defence, to infuse science into our Army, and to give our fortifications that degree of force, connection, and perfection which can alone counterbalance the superiority of attack over defense.

Tabular list of Chiefs of the Corps of Engineers of the Armies of the United States, from 1774 to 1868.

Name.	Rank.	Title.	Date of appointment.	Where appointed from.
Richard Gridley *.....	Colonel ...	Chief Engineer	June —, 1775	Massachusetts.
Rufus Putnam.....	.....do .....	.....do	Aug. 5, 1776	Do.
Lewis du Portail.....	.....do .....	.....do	July 22, 1777	France.
Lewis du Portail.....	Brig. Gen.	.....do	Nov. 17, 1777	Do.
Lewis du Portail.....	Maj. Gen.	.....do	Nov. 16, 1781	Do.
Stephen Rochefontaine	Lieut. Col.	Commander Corps of Artillerists and Engineers.	Feb. 26, 1795	—
Henry Burbeck.....	.....do	Commander First Regiment Corps of Artillerists and Engineers.	May 7, 1798	Massachusetts.
Jonathan Williams .....	.....do	Principal Engineer	July 8, 1802	Pennsylvania.
Jonathan Williams .....	.....do	Chief Engineer	Apr. 19, 1805	Do.
Jonathan Williams	Colonel. ...	.....do	Feb. 23, 1808	Do.
Joseph G. Swift.....	.....do .....	.....do	July 31, 1812	Massachusetts.
Walker K. Armistead.....	.....do .....	.....do	Nov. 12, 1818	Virginia.
Alexander Macomb.....	.....do .....	.....do	June 1, 1821	New York.
Charles Gratiot.....	.....do .....	.....do	May 28, 1828	Missouri Territory.
Joseph G. Totten.....	.....do .....	.....do	Dec. 7, 1838	Connecticut.
Joseph G. Totten.....	Brig. Gen.	.....do	Mar. 3, 1863	Do.
Richard Delafield.....	.....do .....	.....do	Apr. 22, 1864	New York.
Richard Delafield.....	.....do	Chief of Engineers.....	July 13, 1866	Do.
Andrew A. Humphreys.	.....do .....	.....do	Aug. 8, 1866	Pennsylvania.

* Chief Engineer Grand Army.

Table showing the number of commissioned officers, cadets, and enlisted men of Engineers, authorized by several acts of Congress since March 16, 1802.

CORPS OF ENGINEERS.																			TOPOGRAPHICAL ENGINEERS.														
Date of act.	Brigadier-General, Chief of Engineers.	Colonels, chief engineers.	Lieutenant-colonels.	Majors.	Captains.	First lieutenants.	Second lieutenants.	Assistant engineer.	Cadets.	Sergeant-majors.	Quartermaster-sergeants.	Sergeants.	Corporals.	Musicians.	Artificers.	Privates.	Total commissioned.	Total enlisted.	Aggregate.	Date of act.	Colonel.	Lieutenant-colonels.	Majors.	Captains.	First lieutenants.	Sergeants.	Corporals.	Musicians.	Artificers.	Privates.	Total commissioned.	Total enlisted.	Aggregate.
March 16, 1802.....	1	1	2	4	4	4	4	4	4	4	4	4	4	4	4	16	4	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February 28, 1803.....	1	1	2	4	4	4	4	4	4	4	4	4	4	4	4	18	16	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April 29, 1812.....	1	1	2	6	6	6	6	6	6	6	6	6	6	6	6	20	80	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April 29, 1816, (resolution).....	1	1	2	6	6	6	6	6	6	6	6	6	6	6	6	20	80	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March 2, 1821.....	1	1	2	6	6	6	6	6	6	6	6	6	6	6	6	20	80	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April 14, 1832, (resolution).....	1	1	2	6	6	6	6	6	6	6	6	6	6	6	6	20	80	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
July 5, 1838.....	1	2	4	12	12	12	12	12	12	12	12	12	12	12	12	48	48	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
May 15, 1846.....	1	2	4	12	12	12	12	12	12	12	12	12	12	12	12	48	48	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August 3, 1861.....	1	2	4	12	12	12	12	12	12	12	12	12	12	12	12	48	48	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August 3, 1861.....	1	4	8	12	12	12	12	12	12	12	12	12	12	12	12	48	48	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March 3, 1863.....	1	4	10	20	30	30	30	30	30	30	30	30	30	30	30	120	120	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June 20, 1864.....	1	4	10	20	30	30	30	30	30	30	30	30	30	30	30	120	120	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
July 28, 1866.....	1	6	12	24	30	30	30	30	30	30	30	30	30	30	30	120	120	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
General Order, December 3, 1870.....	1	6	12	24	30	30	30	30	30	30	30	30	30	30	30	120	120	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Orders June 30, 1874.....	1	6	12	24	30	30	30	30	30	30	30	30	30	30	30	120	120	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Corps merged in Corps of Engineers.

THE ORGANIZATION OF THE CORPS OF ENGINEERS.

From the preceding historical sketch of the Corps of Engineers, and the consideration of the laws which have been enacted concerning it, it is evident that this corps is a military arm of service, the officers of which, by special enactment, are not permitted (when separated from their own troops) to command other troops except by special assignment of the President, and are subject only to his orders when not separated from the command of the Chief of Engineers. The corps does not form a part of the staff of the Army, for it in no case furnishes the Army with the means necessary for its subsistence, comfort, mobility, and action to any greater degree than does the artillery or cavalry. In most services it is termed a special arm, and in all services is assigned a place in line of battle. In our own service, as it was for many years without enlisted soldiers, and the duties of its officers in time of peace took them away from service with troops, it, by regulation, has been styled a "staff corps," a designation not in accordance with our statute law, or the practice of other armies.

It is recommended that its designation should be simply "Corps of Engineers," the legal one, and that the practice which existed till after 1821, of regarding its officers as of the staff, only when assigned to duty with the staff, be restored in service.

DEMANDS OF THE PUBLIC SERVICE IN TIME OF WAR.

The duties required of the Corps of Engineers in time of war consist in planning, tracing on the ground, and superintendence of construction, of all fortifications of whatever nature needed in military operations, and with the planning, laying out, and construction of all works needed in the attack or defense of fortifications. They are also charged with the duty of procuring information concerning the topographical features of the country in which the Army is operating, and with supplying maps of the same, and of the fields of battle; with the selection of positions for camps, fortified or otherwise, and of obtaining information of the enemy's positions, works, and resources. They have charge of the bridge equipage of the Army, and the construction or destruction of such bridges as are necessary for the operations, whether in advance or retreat. To this end, the engineer troops are officered by officers of the Corps of Engineers, and are instructed and drilled in sapping, mining, and pontooning in all their details, and form an integral part of the Army, while those officers of the Corps, not on duty with the troops, may be assigned to the staffs of the commanding generals.

DEMANDS OF THE PUBLIC SERVICE IN TIME OF PEACE.

In time of peace the duties which are devolved upon the Corps of Engineers of our Army by legislative enactment, or by Executive authority, are much more numerous than the duties required of engineers

serving with armies in the field, although many of the duties incident to time of peace, have still to be continued in time of war.

It is difficult to enumerate all the duties which may have been, or which can be devolved on the Corps of Engineers in time of peace. As the duties generally are such as require familiarity with the sciences and arts, any duty which the Government needs performed which involves the application of this character of learning, and comes within the professional training of the several members of the corps, may be devolved by the President upon them. The principal duties, however, in time of peace are, the surveys for the planning and construction of the permanent fortifications of the coasts; the surveys for the planning and construction of the works for the improvement of rivers and harbors—whether by dikes, wing-dams, dredging, canals, breakwaters, or removal of obstructions by blasting or otherwise; the planning and construction of the light-houses, beacons, and all fixed aids to navigation; the construction of public buildings and works in charge of the War Department in the District of Columbia, and in other Departments of the Government when assigned to the corps; the survey of the northern and northwestern lakes; the astronomical determination of boundaries and initial points; the surveys and reconnaissances of the western Territories; the supervision over the construction of bridges across the navigable waters; the instruction of cadets at the Military Academy; service upon the staffs of commanding generals of divisions and departments; and the charge and instruction of engineer soldiers, and their further instruction in the use of torpedoes as an accessory in harbor defenses.

NUMBER, RANK, AND PAY OF OFFICERS AND MEN.

The numbers and rank are fixed by sections 1151, 1154, 1155, Revised Statutes, and by War Department orders of December 3, 1870, and June 30, 1874, issued in accordance with the acts of July 15, 1870, and June 16, 1874, as follows:

SEC. 1151. The Corps of Engineers shall consist of 1 Chief of Engineers, with the rank of brigadier-general, 6 colonels, 12 lieutenant-colonels, 24 majors, 30 captains, 26 first lieutenants, and 10 second lieutenants, and the battalion: *Provided*, That no promotion shall be made to fill any vacancy in said corps above the rank of colonel.

SEC. 1154. The battalion of engineers shall consist of the five companies of engineers now existing, 1 sergeant-major, and 1 quartermaster-sergeant, who shall also be commissary-sergeant.

SEC. 1155. Each company of engineer soldiers shall consist of 10 sergeants, 10 corporals, 2 musicians, and as many privates of the first class, not exceeding 64, and as many privates of the second class, not exceeding 64, as the President may direct.

General Orders }
No. 122. }

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
Washington, December 3, 1870.

As soon as practicable after the receipt of this order, Companies A, B, C, and E of the battalion of engineers will be reduced to 83 enlisted men each, having the proper proportions of sergeants, corporals, and first and second class privates, and Company D will be reduced to 10 sergeants and 10 privates.

* * * * *

[Memorandum.]

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,

Washington, June 30, 1874.

The act making appropriations for the support of the Army for the year ending June 30, 1875, approved June 16, 1874, provides that no money appropriated by that act shall be paid for recruiting the Army beyond the number of 25,000 enlisted men, including Indian scouts, and excepting the Signal Service.

The following schedule will be the basis of the organization of the Army for the present, to be varied according to circumstances :

Enlisted men of engineers.....	200
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* * * * * *

In accordance with this order the companies were directed to be as follows :

Companies A, E.....	50 enlisted men each.
Companies B, C.....	49 enlisted men each.
Company D.....	0
Non-commissioned staff.....	2 enlisted men each.

Total.....	200
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The pay and allowances of officers of the Corps of Engineers will be found under the head of Title XIV, chapter 3, Revised Statutes, and are the same, grade for grade, as in the cavalry arm of service.

Section 1280, Revised Statutes, contains the pay of the enlisted men, namely :

	Per month.
Sergeant-major of engineers.....	\$36
Quartermaster sergeant of engineers	36
Sergeants of engineers.....	34
Corporals of engineers.....	20
Musicians of engineers.....	13
Privates (first class) of engineers	17
Privates (second class) of engineers	13

Under the operations of section 1157, Revised Statutes, Company E Engineers, is stationed at the Military Academy, West Point, to aid in instruction of cadets.

PROPORTION OF ENGINEERS TO THE OTHER ARMS OF SERVICE.

According to the best authorities, the proper proportion of engineer soldiers for an army containing twenty-five regiments of infantry, say 30,000 men, should be seven companies of engineers, of 150 enlisted men each. This body of engineer soldiers would require three field-officers, seven captains, and twenty-one subalterns, to officer it; in all, thirty-one officers—and this estimate is based upon the ordinary field duties of these troops in the Army, no account being taken of the attack by regular approaches upon fortified positions. In this case, the number of engineer troops required would be much greater than the number stated above. The proportions which the several arms of service should

bear to each other, vary with the character of the services required of the Army, and the nature of the country in which the Army is operating. In our own service the cavalry and artillery arms are much in excess of the ordinary proportions of those arms to the infantry; but the peculiar character of the service of cavalry in our country, and the great extent of sea-coast, and large number of sea-coast defenses to be garrisoned and kept in order, give to us a greater proportion of artillery than would be necessary for the operations of 30,000 infantry in the field. What is true of the artillery can be also said of the engineer soldiers, who, in addition to their ordinary duties, are also trained in the handling of electrical torpedoes, to be used as obstructions to the entrances of our fortified harbors.

The engineer troops in our service are, by law, a part of the Corps of Engineers; are organized in companies and a battalion, and are officered by the officers of the corps, who are detailed by roster for this service.

As the new appointees in the corps are at once ordered on duty with the battalion, a majority of the officers of the corps have served in these companies from two to five years, either as subalterns, or company commanders, and have obtained that experience of the interior police and detail of duty, with company and battalion organizations, which is considered of so much value to the officer who subsequently may be detailed on staff-duty.

By the third section of the act of May 15, 1846, the organic act creating a company of sappers, miners, and pontoniers, it is provided that this company "shall be entitled to the same provisions, allowances, and benefits in every respect as are allowed to the other troops constituting the present military peace establishment."

No stronger language could be used to establish the conditions, that engineer troops, in their tactical organizations, are entitled to the same consideration, and are placed upon the same footing as the infantry, artillery, and cavalry.

In their company and battalion organization, these troops have distinguished themselves in time of war upon the line of battle, and the colors borne by the battalion, have inscribed upon them, the names of twenty-four engagements.

It is therefore suggested, that the designation of "staff-troops" applied to them would be a misnomer, and that its adoption for the "Battalion of Engineers" be not authorized in the service.

The number of officers in the Corps of Engineers has not been determined in our service by the ordinary consideration of the relative proportions of the several arms, since a majority of the duties required of them, has no relation whatever to the ordinary operations of an army in the field.

The Secretary of War, John C. Calhoun, in his communication to the House of Representatives, December 11, 1818, concerning the proposed

